STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
State Revolving Fund Loan Program
L & C Tower, 8th Floor
401 Church Street
Nashville, TN 37243

FINDING OF NO SIGNIFICANT IMPACT
Approval of Facilities Plan
Lenoir City (Loudon County), Tennessee
Project No. SRF 2008-218

January 14, 2008

The National Environmental Policy Act requires federally designated agencies to determine whether a proposed major agency action will significantly affect the environment. One such major action, defined by Section 511(c)(1) of the Clean Water Act, is the approval of a facilities plan prepared pursuant to Title VI of the Clean Water Act. In making this determination, the State Revolving Fund (SRF) Loan Program assumes that all facilities and actions recommended by the plan will be implemented. The state's analysis concludes that implementing the plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this Finding of No Significant Impact (FNSI) for public review.

The Lenoir City Utilities Board has completed the facilities plan entitled "Wastewater Treatment Plant Expansion" dated January 13, 2006. The facilities plan provides recommendations for improvements to the wastewater treatment system serving Lenoir City. Lenoir City plans to expand the Wastewater Treatment Plant (WWTP) from 2.0 million gallons per day (MGD) to 4.0 MGD in 2 phases via the staged construction of two 1-MGD oxidation ditches in order to limit the initial capital expenditure. The second 1-MGD oxidation ditch is proposed for construction sometime within the next five years. This proposed project will expand the WWTP from 2.0 MGD to 3.0 MGD and includes the construction of a 1-MGD oxidation ditch, two clarifiers, a chlorine contact tank, and related appurtenances and the modification of the existing trickling filter and related appurtenances. All construction will occur on the existing wastewater treatment plant site. The total estimated project cost is $14,250,000. A State Revolving Fund loan in the amount of $13,500,000 has been requested for this project. The remainder of the project cost will be funded by a $750,000 Economic Development Administration Grant.

Attached is an Environmental Assessment containing detailed information supporting this proposed action. Comments supporting or disagreeing with this proposed action received within 30 days of the date of this FNSI will be evaluated before we make a final decision to proceed. If you wish to comment or to challenge this FNSI, send your written comment(s) to:

Mr. Sam R. Gaddipati, Environmental Manager
State Revolving Fund Loan Program
Tennessee Department of Environment and Conservation
L & C Tower, 8th Floor
401 Church Street
Nashville, TN 37243

or contact him by telephone at (615) 532-0445 or by e-mail at sam.gaddipati@state.tn.us.

ENVIRONMENTAL ASSESSMENT
Lenoir City (Loudon County), Tennessee
Project No. SRF 2008-218

January 14, 2008

A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS

The facilities plan provides recommendations for improvements to the wastewater treatment system serving Lenoir City. Lenoir City plans to expand the Wastewater Treatment Plant (WWTP) from 2.0 million gallons per day (MGD) to 4.0 MGD in 2 phases via the staged construction of two 1-MGD oxidation ditches in order to limit the initial capital expenditure. The second 1-MGD oxidation ditch is proposed for construction sometime within the next five years. This proposed project will expand the WWTP from 2.0 MGD to 3.0 MGD and includes the construction of a 1-MGD oxidation ditch, two clarifiers, a chlorine contact tank, and related appurtenances and the modification of the existing trickling filter and related appurtenances. All construction will occur on the existing wastewater treatment plant site. The facilities planning area and project location are indicated on Figure No. 1 of this Environmental Assessment.

FUNDING STATUS

The facilities described above comprise the scope of Clean Water State Revolving Fund Loan No. SRF 2008-218 scheduled for funding in fiscal year 2008. The estimated project costs are summarized in the following tabulation:

PROJECT CLASSIFICATIONS	COSTS ($)
Administrative & Legal	40,000
Design Fees	912,500
Engineering Basic Fees	80,000
Other Engineering Fees	290,000
Resident Inspection	335,000
Construction	11,750,000
Contingencies	842,500
TOTAL	14,250,000
State Revolving Fund Loan	13,500,000
Economic Development Administration Grant	750,000

Lenoir City has applied for a $13,500,000 State Revolving Fund loan. The remainder of the project cost will be funded by a $750,000 Economic Development Administration Grant.

B. EXISTING ENVIRONMENT

Lenoir City's Planning Area is located in Loudon County in east Tennessee. A discussion of existing environmental features in the area include the following:

SURFACE WATERS

Surface waters within the proposed Planning Area include the Tellico Reservoir, Fort Loudon Reservoir, Little Tennessee River, Baker Creek, Notchy Creek, Fourmile Creek, Ninemile Creek, Bat Creek, Smokey Branch, Harrison Branch, Hammontree Branch, Corntassel Branch, Kennedy Branch, Miller Branch, Chaney Branch, Maree Branch, and their tributaries. The designated uses

for surface waters in the Planning Area include domestic water supply, industrial water supply, fish and aquatic life, recreation, irrigation, livestock watering and wildlife, and navigation. The Lenoir City Utilities Board (LCUB) supplies drinking water to the Lenoir City and portions of Loudon, Knox, and Roane Counties. The raw water is obtained from a surface water intake on the Tennessee River Watts Bar Embayment upstream of the WWTP's effluent discharge point.

GROUNDWATER

All of Loudon County lies in the Valley and Ridge province. The surface forms, which consist of alternating ridges and valleys, reflect the varying resistance to weathering that the folded and faulted, dominantly calcareous rocks possess. Rocks that crop out in Loudon County range in age from Lower Cambrian to Middle Ordovician. The oldest rocks, the varicolored sandstone and shale of the Rome formation of Early Cambrian age, are exposed in the extreme southeastern part of the county and along the southeastern side of the Beaver Valley fault in the northwest part of the county. A normal stratigraphic section from the Rome formation up through the Ottosee shale is found between the Beaver Valley fault and the Saltville fault to the southeast. Members of the Knox group form Black Oak Ridge in this area. With the exception of the Rome and Pumpkin Valley formations, all of these rocks are calcareous. The Rome formation contains some calcareous zones, but most of it is noncalcareous. The Pumpkin Valley shale contains little calcareous material.

The rocks in Loudon County have little primary porosity. Therefore, the occurrence of ground water is controlled by the secondary porosity resulting from fractures caused by the folding and faulting of the rocks. Circulating ground water frequently enlarges these fractures. Because the amount of solution decreases with depth, it is generally not productive to drill wells deeper than 300 feet (ft). The average well in Loudon County yield sufficient water for domestic use. Ground water quality is generally good in the area.

SOILS

There are six soil associations identified in the Lenoir City Planning Area.

The Fullerton-Clarksville-Bolton Association has developed over dolomites and is generally located in areas of irregularly shaped hills that have fairly narrow tops. Fullerton soils occupy approximately two-thirds of the acreage and are well-drained, cherty, and upland soils. This soil group has moderate percolation rates.

The Fullerton-Greendale-Dewey Association consists of light colored, cherty, and red soils on rolling and hilly uplands underlain by dolomite limestone. The soils in this association have a slower permeability than the Fullerton-Clarksville-Bolton Association and erosion problems can occur if erosion control measures are not properly maintained.

The Dewey-Decatur-Emory Association includes soils that re deep and well-drained with red subsoils on rolling to hilly uplands. Soils in this association are moderately permeable but severe flooding can occur in low-lying areas.

The Tellico-Alcoa-Newbert Association can be found in a relatively narrow belt south of Loudon. The area is generally steep to very steep hills and knobs underlain by calcareous

sandstone and sandy shale. Poor slope stability represents the primary limitation for intensive urban development, especially where the slopes are steep.

The Waynesboro-Cumberland-Emory Association is found along the Tennessee River. The area is one of high stream terraces and bottom lands. Only moderate limitations exist with regard to development on these soils. Percolation rates pose no significant problems.

The Huntington-Lindsdale-Melvin-Congaree Association is generally located along the bottom lands adjacent to the streams in Loudon County. Moderate to severe limitations apply to these soils with respect to permeability. This association is frequently subject to flooding.

TOPOGRAPHY

Lenoir City's Planning Area is primarily characterized by ridges and valleys running southwest to northeast that range from nearly level to slopes in excess of twenty percent. Local elevations range from 813 to 1125 feet above mean sea level.

OTHER ENVIRONMENTAL FEATURES

No wild or scenic rivers or unique agricultural, scientific, cultural, ecological, or natural areas were identified in the Lenoir City's Planning Area.

C. EXISTING WASTEWATER FACILITIES

The LCUB owns and operates the only wastewater collection and treatment system in Lenoir City. The WWTP, constructed in 1969, has a capacity of 2 MGD and consists of preliminary screening, grit removal, primary sedimentation, plastic media trickling filter, secondary clarifier, chlorine disinfection, and an aerobic sludge digester. Sludge is dewatered in sludge drying beds during inclement weather and land applied on sites approved by the Division of Water Pollution Control (WPC). Treated effluent is discharged at River Mile 600.1 of the Tennessee River. The WWTP currently operates under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN0020494 that includes the following parameters and effluent limitations:

PARAMETER	EFFLUENT LIMITATIONS
$CBOD_5$	30 milligrams per liter (mg/l)
Suspended Solids	30 mg/l
Fecal Coliform	200/1000 colonies per milliliter
Dissolved Oxygen	1.0 instantaneous minimum
Chlorine Residual, Total	2.0 instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)

LCUB has experienced significant growth over the last several years because of the rise in economic development and growth within the service area. The WWTP is currently operating at 90% of its design capacity. The WWTP is also experiencing mechanical failures and operational problems because of the age of the existing equipment. LCUB has received violations of its

NPDES Permit for biochemical oxygen demand, dissolved oxygen, fecal coliform, total supended solids, and wastewater collection system overflows.

LCUB's wastewater collection system consists of approximately 55 miles of 8-inch through 36-inch diameter gravity and interceptor sewer, 28 pump stations with capacities ranging from 25 to 1600 gallons per minute, approximately 16 miles of 2-inch through 12-inch diameter force main, and approximately 980 manholes. Collection system pipe materials are vitrified clay, ductile iron and polyvinylchloride (PVC) pipe.

LCUB recently began implementation of a Corrective Action Plan for sewer system rehabilitation to eliminate sanitary sewer overflows. Some collection system improvements have been completed and the infiltration and inflow and wet weather WWTP influent flows have been reduced.

D. NEED FOR PROPOSED FACILITIES AND ACTIONS

The WWTP is in need of significant rehabilitation and expansion to treat the projected increase in wastewater flows from 2.0 MGD to 3.0 MGD. The Department issued a Commissioner's Order on February 16, 2006, citing permit violations for biochemical oxygen demand, dissolved oxygen, total suspended solids, and fecal Coliform bacteria requiring an implementation plan scheduling improvements to the existing WWTP to bring its performance into compliance with the NPDES discharge permit. Therefore, LCUB decided to upgrade and expand the current WWTP in 2 phases in order to bring the WWTP into compliance with the NPDES permit.

Existing and projected facility conditions are shown in the following table:

EXISTING AND PROJECTED FACILITY CONDITIONS

POPULATION	EXISTING (2007)	PROJECTED (2027)
Lenoir City	7,500	9,200
% Sewered	100%	100%
Planning Area Excluding Lenoir City	18,300	28,800
% Sewered	30%	30%
Total Planning Area	25,800	38,000
% Sewered	50%	47%

LCUB WWTP FLOWS gallons per day (GPD)	EXISTING (2007)	PROJECTED (2027)
Domestic/Commercial	955,975	1,318,920
Industrial	140,025	910,360

LCUB WWTP FLOWS gallons per day (GPD)	EXISTING (2007)	PROJECTED (2027)
Infiltration	104,000	112,000
Inflow (during rainfall events)	1,400,000	1,500,000
TOTAL	2,600,000	3,841,280

E. ALTERNATIVES ANALYSIS

Several alternatives, including a "No-action" alternative, were evaluated for wastewater treatment and management in the January 13, 2007, facilities plan. A summary discussion of the evaluation of each alternative for wastewater treatment and the selection of the recommended plan follows:

NO ACTION

The "No-action" approach was not a viable alternative. The state and federal governments have issued discharge limitations that must be met in order to maintain or improve surface water conditions. These parameters cannot be met by the facilities as they now exist. Therefore, some action must be taken to protect the environment and public health, and this alternative was rejected.

ALTERNATIVES FOR TREATMENT

Upgrade the Existing WWTP with Bio-Towers

This process consists of a fixed bed of media over which distributor arms apply the wastewater for aerobic treatment, an underdrain system, and recirculation lines. This alternative includes the construction of a primary sedimentation tank, two plastic media Bio-Towers, two secondary clarifiers, and a chlorine contact tank. This alternative was not the most cost-effective and was rejected.

Upgrade the Existing WWTP with a Solids Contact Process

This process includes a trickling filter, aerobic solids contact, flocculation, and secondary clarification. Solids from the clarifier are recycled to combine with the trickling filter effluent. This alternative includes the construction of a primary sedimentation tank, a plastic media Bio Tower, four aerated solids tank, two secondary clarifiers, chlorine contact tank, sludge holding tank, and a gravity belt thickener. This alternative was not the most cost-effective and was rejected.

Upgrade the Existing WWTP with the Staged Construction of two 1-MGD Oxidation Ditches

An oxidation ditch is an activated sludge process commonly based on the extended aeration mode. Horizontal brush, cage, or disc type aerators are used. Typical oxidation ditch treatment systems consist of a single closed-loop channel four to six feet deep with sloping sidewalls. This alternative includes the expansion the existing WWTP from 2.0 MGD to 4.0 MGD in 2 phases via the staged construction of two 1-MGD oxidation ditches. The second 1-MGD oxidation

ditch is proposed for construction sometime within the next five years. This proposed project will expand the WWTP from 2.0 MGD to 3.0 MGD and includes the construction of a 1-MGD oxidation ditch, two clarifiers, a chlorine contact tank, and related appurtenances and the modification of the existing trickling filter and related appurtenances. This alternative was the most cost-effective and was selected.

F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES

The environmental benefits of this project will be a reduction in permit violations and the improvement of water quality conditions in the area.

During the construction phase, short-term environmental impacts due to noise, dust, mud, disruption of traffic, runoff of silt with rainfall, etc., are unavoidable. Minimization of these impacts will be required; however, many of these minimization measures will be temporary and only necessary during construction. Using the following measures to prevent erosion will minimize impacts on the environment:

1. Specifications will include temporary and permanent measures to be used for controlling erosion and sediment.
2. Soil or landscaping maintenance procedures will be included in the specifications.
3. The contractor will develop an Erosion Control Plan. It will contain a construction schedule for each temporary and permanent measure controlling erosion and sediment. It will include the location, type, and purpose for each measure and the times when temporary measures will be removed or replaced.

These measures, along with requiring the contractor to return the construction site to as-good-as or better-than its original condition, will prevent any adverse impacts due to erosion.

G. PUBLIC PARTICIPATION; SOURCES CONSULTED

A Public Meeting was held on December 13, 2007, at 6:00 p.m., local time. The selected plan for wastewater collection and treatment and user charges were described to the public, and their input was received. This agency is not aware of any unresolved public objections that may have been voiced before or after the public meeting regarding this project.

The annual median household income for the Lenoir City is $36,278. Sewer rates for the typical commercial/residential user (5,000 gallons per month) are $49.16. The existing user charges are projected to be sufficient to repay the SRF loan. Therefore, no incremental increase in user charges will be required.

Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development (ECD)
3. Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control (DAPC)
4. Tennessee Department of Transportation (TDOT)
5. TDEC, Division of Groundwater Protection (DGWP)
6. Tennessee Historical Commission
7. TDEC, Division of Archaeology (DA)
8. TDEC, Division of Natural Areas (DNA)
9. TDEC, Division of Solid Waste Management (DSWM)
10. TDEC, Division of Water Pollution Control (DWPC)
11. TDEC, Division of Water Supply (DWS)
12. Tennessee Wildlife Resources Agency (TWRA)
13. United States Army Corps of Engineers (USACE)
14. United States Fish and Wildlife Service (USF&W)
15. Lenoir City
16. Loudon County
17. Fulghum MacIndoe & Associates, Inc.